An Essay
On the
Theory of Generation

Respectfully submitted
To the Faculty
Of the
Homoeopathic Medical College
Of Pennsylvania
By
Edgar S. Everts
Of
New York
Feb. 1st 1858.

Good

The Theory of Generation

This great and important subject, has engrossed the attention of our most eminent physiologists, since the days of Galen, giveing rise to much controversy, as to the true theory - each arduously laboring to sustain his views, wherein they differed materially from thos who had preceded. Notwithstanding the labarious endeavors of many, who have strove to find out the hidden workings of nature, there still remains a great diversity of opinion, respecting the formation, or the varied changes, the germ being passed through, during its development, from the primitive cell, to the period of its becoming a perfect, and independant being. Judgeing from past researches, and the various theories which have been advocated, we are led

to infer, that the masses will never concur, and become unanimous advocates of any one hypothesis, respecting mans formation. It should not be expected of the student, that he is to become the originator of any new theory — but to the contrary, methinks he should in an unbiased manner, carefully search the records, left by those whose theory of generation was not mere assertion — but the result of long continued, and experimental knowledge. Such being the case, we will follow the usual routine — deducing from the many authors, those opinions which seem to be the most consistent, and reliable. The several acts necessary for the reproduction of the human species, may

be comprised under five general heads. viz
Copulation, Conception or fecundation,
Gestation or pregnancy - delivery or
accouchment - and lactation, or the
nourishment of the infant, after it
has become a being, having within
itself, the power of sustaining life,
independent of the mother. First,
it will be necessary to examine, as
regards the part, man is called
upon to bear, in the perpetuation of
succeeding generations of similar beings.
The male organs of generation, consists
of the testes, the excretory ducts of
the glands, termed Vasa deferentia - the
vesicula seminalis, the ejaculatory ducts,
and the penis. The Seminal fluid
is secreted by the testes, which are

glandular bodies, composed of several lobes, and each lobule is invested by a distinct sheath. From each lobule arises, one or more minute tubuli, exceedingly convoluted, and are known as the tubuli seminiferi. As these tubuli proceed, their convolutions cease, and terminate in the vasa recta, which passing through the mediastinum testis, become the rete testis. The rete testis, is but the continuation of the vasa recta, and tubuli seminiferi. The rete testis is composed of several tubuli, which freely anastomose with each other, and passing to the upper extremity of the mediastinum, terminate by from nine to thirty small ducts, called the vasa efferentia. Here again as in the vasa recta, that portion

of the canal, termed the vasa efferentia, becomes nearly straight for a short distance, when it again becomes convoluted, forming the coni vasculosi constituting the globus major of the epididymis. Still convoluted and passing downward, these tubuli gradually enlarge, and after forming the globus minor, terminate in a single, and convoluted duct, the vas deferens. The vas deferens passes upwards from the globus minor, posteriorly to the spermatic cord and canal, to the internal abdominal ring - from thence it is reflected to the fundus of the bladder, and descends along its posterior surface, to the inner border of the vesiculæ seminalis. From this place

it becomes larger, and passes onward and terminates at the base of the prostate gland uniteing with the duct of the vesicula seminalis, constituting or forming the ejaculatory duct. Thus have we minutely examined the anatomical structure of the testis, whose function is, to secrete a fluid, which is thick, tenacious, and of a grayish white color. It is difficult to obtain the seminal fluid in a pure state, as it becomes, ere being discharged mingled with with the secretion of the prostate glands. By analysis, the seminal fluid in combination with the secretion of the prostate & Cowpers glands - it is found to have an alkaline reaction, containing albumen, with a peculiar

animal principal, termed Spermatin. Also saline substances, as phosphates and muriates, particularly the former, which forms crystals, when the fluid is permitted to stand for a while. The peculiar odor of the semen in combination, does not belong to the proper spermatic fluid, but is derived from one or more of the other secretions, with which it is so intimately blended. By microscopic examination, spermatic fluid is found to contain, small oval flattened bodies, of various forms having tail like appendages, which move about for some time after quitting the living organism. The human spermatozoa is found to be from one six hundredth, to one eight hundredth of a line in length

A knowledge of these very minute bodies, is of great importance to the physician and medical jurist. According to Wagner and Kolliker these minute bodies cannot be classed in the same category with animalcules as they long were. They are but the products, of the formative action of the organs in which they are found, being developed in the interior of cells. which may be seen with the microscope in all stages of development and are termed "seminal granules" and are regarded by some as the epithelial cells, of the tubuli seminiferi. There is no doubt but that the active principle of semen lies in the Spermatozoa, without which fecundation cannot take place.

At the period of puberty in the male is the power of procreation established, though previous to this time, there is a fluid secreted by the testes, but no spermatozoa are found. The power of procreation in man, if not abused, continues to a longer period than in the female, as undoubted instances are recorded of mans virility, until the age of one hundred years.

Having passed over the most important part which man is called upon to bear, viz. the producing of a fertilizing material, known as the spermatozoa we will now proceed to examine the functions of the female organs, though time or space will not permit me to do the subject justice in all its varied phases.

The female organs of generation, are usually divided into, the external, and internal. The external consists, of the mons veneris, labia externa, perineum clitoris, nymphae, vestibule, meatus urinarius, the hymen in virgins, & the carunculae=myrtiformes in matrons. The internal organs, are the vagina, uterus & uterine appendages which are the broad ligaments, the round ligaments, two ovaries, and two fallopian tubes which expand at their terminal extremity, into a trumpet-shaped enlargement, which is called the fimbria. The most essential part of the female generation system, is that in which the ova are prepared for fecundation, the other organs being merely accessory, and are not found in a large

proportion of the animal kingdom. The ovaries are situated on the posterior face of the broad ligaments, and are attached to the uterus by a ligament of their own - the ligamentum ovarii. They are oval in shape and have two coats - an external peritoneal - and an internal, the tunica albuginea. On removing these we come to the proper tissue of the ovary called its stroma, which consists of dense cellular tissue, containing within its meshes numerous little vesicles termed Graafian, from the name of their discoverer. The Graafian vesicle has two coats, an external, which Barry calles the tunic of the ovisac, and an internal coat - the ovisac. Within the cavity formed by these membranes

is found, floating in an albuminous fluid, the ovum, which is exceedingly small and closely resembles in all its details the egg of the chick. The ovum also contains within its membrane, (which is called the yelk membrane) a granular fluid, termed the yelk, in the center of which, is seen the germinal vesicle, and on the walls of the germinal vesicle, its nucleus is seen, termed, the germinal spot. This germinal spot, is the most essential part of the ovum, fulfilling the same office, as does the germ cell in the vegetable ovule. It is supposed that the Graafian vesicle is formed, previous to the ovum, which is subsequently developed in its interior. In the human female, the period of

commencing aptitude for procreation, is somewhat earlier in warm climates, than in cold, also the mental, and bodily habits, of the person, has a great influence in bringing about the period of puberty, which in this country is generally between the thirteenth, and sixteenth year. As has been previously stated, the duration of the period of aptitude for procreation is more limited in the female, than in man - in woman usually ceasing about the forty fifth year, and very rare indeed is it that woman conceives above the fiftieth year of her age. Before we proceed farther, it will be necessary to speak briefly of menstruation, which is inseperably connected with our subject.

By the term menstruation is understood, that function in the female economy by which a certain amount of sanguineous fluid, is eliminated, by the uterus & discharged from the vagina every month. This function usually commences at the period of puberty, and during the whole of woman's menstrual life she is capable of conceiving, after which her reproductive function ceases. The many theories which have been advocated to explain the efficient cause of menstruation are too numerous, and too unsatisfactory to merit notice. The most reasonable one is that which looks upon the maturation, and escape of ova, as the efficient agent. Menstruation is con-
sidered by some, as synonymous to

heat in the lower animals and tis probable, that there exists some relation betweene the two, for the reason that the female conceives, more readily at that period, than at any other time. Tis supposed that at each menstrual period an ovum is brought to maturity, and bursting its sack or coverings passes out through the fallopian tubes, uterus, and vagina, in connection with the menstrual fluid. The catamenia usually ceases during pregnancy, and lactation, and its cessation, is considered one of the earliest signs of conception. But this is not always an infallible sign of pregnancy, as cases are recorded in which the menstrual flow continued

during the whole period of gestation, and again, those who never menstruated except during pregnancy. When the sexual feeling is excited in the female, there is a degree of turgescence in the erectile tissue surrounding the vagina, the nymphæ, & clitoris— also there is an increase of secretion in glandular follicles, surrounding the parts. But these conditions are by no means necessary— as there are unclouded instances recorded, where conception has taken place, when the female was in a narcotic state— or of profound sleep. Some contend that during the excitement of coition the osuteri dilates to receive the semen— but this cannot be wholy true. as we learn of cases in

which by the introduction of a small quantity of the seminal fluid, just within the vagina - conception has taken place in spite of the closure of ~~the entrance to~~ the entrance of the vagina in which but a very small apparture existed. Again there are those who contend for a special circulation through vessels whose only office is to convey the fecundating principle to the ovaries. But of this we have no evidence, as they have never been detected, making it mere assertion, without proof. Tis generally believed that the spermatozoa make their way towards the ovarium, and fecundate the ovum either before or shortly after it quits the ovisac. We are led to

engine in what manner they get there.
This is a much disputed point: some
asserting, or believe it to be carried
through the fallopian tubes by ciliary
action - others believe it pursues the
same course by peristaltic action.
But the great objection to these views
are, that unfortunately, the ciliary and
peristaltic action is from the ovaries,
and not towards them. And again
as I have mentioned before some
suppose the Spermatozoa to pass to the
ovaries through the medium of Special
absorbants. It seems not unreasonable
to suppose that the power of movement
inherent in themselves. (the Spermatozoa)
is the manner by which they reach the
ova, being the same kind of action

which they are discovered to have, whilst they travel the field of the microscope. Great changes are continually taking place in the ovum - as well as in the walls of the Graafian vesicle, up to the period when the ovum is brought to maturity. When mature, the ovisac bursts leaving an irregular cavity after the discharge of the impregnated ovum. This cavity gradually diminishes, until it is nearly obliterated leaving a cicatrix termed the "corpus luteum". Some profess to judge of the number of pregnancies, by the corpus luteum, but this seems hardly reliable, according to the carefull researches of Dr. Montgomery, who says "they are at times and quite frequently entirely obliterated" And

again the number of cicatrices may be greater than the number of children born, from various causes, such as the escapeing of an unimpregnated ova, or the forming & bursting of little abscesses. Previous to the bursting of the Graafian vesicle, and the escape of the ovum. the uterus undergoes a change preparatory to receiving the impregnated ova. The whole interior of the uterus becomes coated with a pulpy fluid, which covers over the cervix & fallopian tubes. This becomes hard and resembles coagulated lymph, and is called the decidua vera. When these preparatory changes ~~the~~ are complete, the ovum now descends the fallopian tubes on its way to the uterus. it comes

in contact with this membrane at the orifice of the fallopian tubes, which it pushes before it; at the same time it is reflected over itself thus forming what is known as the decidua reflexa. In order to have the subject complete it would be necessary to trace the development of the foetus onward, until it became a perfect, and independent being. But time or space will not permit, as the development of the foetus is of itself sufficient for a lengthy thesis. Such being the case I close this brief & imperfect essay. hoping the honorable faculty will overlook all its imperfections. and accept of it as coming from a student who has yet much to learn.

Respectfully Yours E. S. Everts.